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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,809	10/30/2003	Richard G. Hoffman II	004578.1379	1299

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EXAMINER	
ALSOMIRI, ISAM A	
ART UNIT	**PAPER NUMBER**
3662	

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/696,809	HOFFMAN, RICHARD G.	
	Examiner	Art Unit	
	Isam Alsomiri	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *031405*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9, 12-19, and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Squire et al. US006057915A in view of Sepp GB 2 219 708 A.

Referring to claims 1, 13, and 25. Squire discloses in figure 1 a method comprising: transmitting 26 a defined beam of eye safe laser energy; receiving reflected energy from the beam; and analyzing information in the received energy so as to track a projectile (see Abstract). Squire does not specifically teach detecting the presence of a previously undetected moving projectile by detecting Doppler shift in the reflected signals. Sepp teaches a similar system to Squire where there are two steps for detecting a projectile, first a thermal imaging is used to narrow the field of view and create hot spots, which is similar to Squire (mode 1 operation), then a laser-heterodyne sensor is used to detecting the presence of a previously undetected moving projectile by detecting Doppler shift in the reflected signals (see page 5 –6 and figure 1). It would have been obvious to modify Squire to use the methods of Sepp in detecting the target for more precise measurements and detection in a shorter time, and since both systems are very similar, only minor modification are needed.

Referring to claims 2 and 14. Squire shows in figure 1the beam to have an azimuth angle and an elevation angle.

Referring to claims 3 and 15. Squire teaches selecting the azimuth angle to be 360 degrees (see col. 5 lines 14-16).

Referring to claims 4 and 16. Squire teaches selecting the elevation angle to be approximately 10 degrees (see col. 5 lines 22-23).

Referring to claims 5 and 17. Squire teaches the receiving includes directing the reflected energy onto a detector having at least two-dimensional array of detector elements, each the detector element receiving reflected energy from a respective different direction (see Abstract).

Referring to claims 6 and 18. It is inherent that Squire's analyzing unit includes the detecting a Doppler shift in the received energy to obtain (velocity and direction data).

Referring to claims 7 and 19. Squire teaches the receiving includes directing the reflected energy onto a detector having at least two-dimensional array of detector elements, each the detector element receiving reflected energy from a respective different direction (see Abstract).

Referring to claims 8 and 20. Although Squire's system does not mention that the receiving unit includes directing onto the detector a reference beam (transmitted beam), so that energy from the defined beam mixes with energy from the reference beam in each the detector element to produce sum and difference frequencies. However, Sepp teaches a heterodyne-sensor which reads on the claimed "to produce

sum and difference frequencies". It would have been obvious to modify Squire's system to include the heterodyne detection for it's good sensitivity and to obtain better S/N ratio.

Referring to claims 9 and 20, the combination of Squire and Sepp teaches supplying an output signal from each said detector element to a plurality of circuit portions which each perform at least one of filtering and fast Fourier transformation. (see figure 1 [18] in Sepp)

Referring to claims 12 and 24. As mentioned above (see rejection of claims 8 and 20), Sepp teach the heterodyne detection, which include a reference beam from the laser generator, which is equivalent to the claimed defined beam (see figure 1 in Sepp).

Claims 10-11 and 22-23 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Squire et al. US006057915A. in view of Ruff et al. US006844924B2.

Referring to claims 10 and 22. Squire is silent about the defined beam to include chirp modulation. Ruff teaches using chirp modulation (see Abstract). It would have been obvious to modify Squire's system to include the chirp modulation because it gives good accuracy for time of flight measurements as it only correlates well at a single well defined time of arrival. Additionally it can be detected when the received chirp level is well below the level of any random noise.

Referring to claims 11 and 23. It is inherent that Squire's system teaches modulation with a single frequency. However, even if Squire's system does not teach the single frequency; Ruff teaches the signal frequency (see Abstract). It would have

been obvious to modify Squire's system to use a single frequency modulation based on the range of the target.

Response to Arguments

Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isam Alsomiri whose telephone number is 571-272-6970. The examiner can normally be reached on Monday-Friday 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isam Alsomiri

August 21, 2005

THOMAS H. TARCZA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600